

REMARKS

A. Status of the Claims

Claims 3-8 are canceled and claims 1 and 2 are amended. Therefore, claims 1 and 2 are pending after entry of this amendment.

B. Rejections under 35 U.S.C §112, Second Paragraph

The Examiner has rejected the claims as allegedly indefinite for the recitation of the term "wetable" in claims 1, 2, 4, and 5; the phrase "activated by to impart" in claim 2; and the phrase "at least one of said convertible functional groups" in claim 4. To expedite prosecution, Applicant has amended the claims by deleting the above-identified terms and phrases.

Applicant has deleted the term "wetable" from the claims. The claims now specify that the "first wettable state" is a "hydrophobic state" and the "second wettable state" is a "hydrophilic state."

The phrase "activated by to impart" has been removed from claim 2. Claim 2 now recites that the convertible functional groups are activated by photocleavage, photo-isomerization, catalytic-polymerization, or photoreaction activities.

Claim 4 has been canceled. Thus, Applicant respectfully submits that the Examiner's rejection of claim 4 as indefinite is now moot.

Because each of the terms and phrases identified by the Examiner as indefinite have been removed from the claims, Applicant respectfully requests withdrawal of the rejections under 35 U.S.C. §112, second paragraph.

C. Rejections under 35 U.S.C §103(a)

The Examiner has rejected the claims as allegedly obvious over Fodor *et al.* (U.S. Patent No. 5,424,186) (hereinafter referred to as "Fodor") in view of Wohlstadter *et al.* (U.S. Patent No. 6,066,448) (hereinafter referred to as "Wohlstadter"). The Examiner asserts that Fodor teaches an array device having "regions with a first wettable state and a second wettable state (hydrophobic/hydrophilic layer)," and immobilization regions surrounded by "border

regions." The Examiner further asserts that Wohlstadter teaches the use of "patterned hydrophilic/hydrophobic border regions to prevent spreading of applied fluids." The Examiner submits that it would be obvious to substitute the "border regions" of Wohlstadter with the "first wettable state and a second wettable state (hydrophobic/hydrophilic layer)" of Fodor to obtain Applicant's claimed invention.

Applicant traverses the rejection and respectfully assert that the Examiner has failed to establish a *prima facie* case of obviousness because:

- (1) The combined references fail to teach or suggest an array device having a selectively achievable hydrophilic state, much less a border region with a selectively achievable hydrophilic state;
- (2) Wohlstadter teaches away from the use of border region(s) having a selectively achievable hydrophilic state; and
- (3) There is no suggestion or motivation to combine Wohlstadter and Fodor.

1. Burden of Proof in Establishing *Prima Facie* Obviousness

"The examiner bears the burden of establishing a *prima facie* case of obviousness. *In re Rijckaert*, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993); *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). Only if this burden is met does the burden of coming forward with rebuttal arguments or evidence shift to the applicant. *Rijckaert*, 9 F.3d at 1532, 28 USPQ2d at 1956. When the references cited by the examiner fail to establish a *prima facie* case of obviousness, the rejection is improper and will be overturned. *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988)." See *In re Deuel*, 51 F.3d 1552, 34 USPQ2d 1210, 1214 (Fed. Cir. 1995).

In order to establish a *prima facie* case of obviousness, the rejection must demonstrate that (1) the cited references teach all the claimed elements; (2) there is a suggestion or motivation in the prior art to modify or combine the reference teachings; and (3) there is a reasonable expectation of success. MPEP § 2143; *In re Vaeck*, 20 USPQ2d 1438 (Fed. Cir. 1991). As explained below, Applicant submits that the cited references fail to teach all the claimed elements and motivate against combining the references.

The Federal Circuit has recently held that "[m]ost if not all inventions arise from a combination of old elements... Thus, every element of a claimed invention may often be found in the prior art... However, identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention... Rather, to establish obviousness based upon a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant." *See In Re Kotzab*, 217 F.3d 1365, 1369-1370 (Fed.Cir. 2000)(citations omitted)

A "useful general rule" is that references which "teach away cannot serve to create a prima facie case of obviousness." *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1354 (Fed.Cir. 2001)(citations omitted). "Proceeding contrary to the accepted wisdom... is 'strong evidence of unobviousness.'" *Ruiz v. Foundation Anchoring Systems, Inc.*, 234 F.3d 654, 667 (Fed.Cir. 2000)(citations omitted).

Finally, the Federal Circuit has held that a prior art reference must be considered in its entirety, including portions that would lead away from the claimed invention. *See* MPEP § 2143.02, citing *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540 (Fed. Cir. 1983).

2. The combined references fail to teach or suggest an array device having a selectively achievable hydrophilic state.

The Examiner cites column 2, lines 32-68 for the proposition that Fodor teaches an array device having "regions with a first wettable state and a second wettable state (hydrophobic/hydrophilic layer)," and immobilization regions surrounded by "border regions." Applicant respectfully disagrees with the Examiner's interpretation of Fodor.

At column 2, lines 32-68, Fodor describes a substrate for use in the synthesis of polymers such as peptide sequences. The substrate contains linker molecules having a reactive group at the terminal end of the linker protected with a photoremovable protecting group. Exposure to light reveals the reactive group, which is then reacted with a monomer, such as an amino acid monomer. The amino acid monomer may also contain a photoremovable protecting group, which may be removed before addition of a second amino acid monomer, thereby

forming a peptide sequence. By directing light to small locations on the substrate, peptides of desired length and chemical sequences are obtained.

The cited passage never mentions the presence of a border. In fact, Applicant respectfully submits that *no portion of the Fodor specification teaches or suggests the presence of a border* surrounding an immobilization region on the surface of the substrate.

The cited passage also fails to mention the presence of a hydrophobic component or hydrophilic component. Moreover, Fodor as a whole *fails to teach* or suggest *any component* of the substrate *having a selectively achievable hydrophilic state*. Applicant acknowledges that Fodor discloses linker molecules having photoremovable protecting groups and reactive groups capable of binding to monomers. Although these modifications to the linker appear to be selectively achievable, the Examiner has presented no evidence that the removal of the protecting groups or the addition of monomers results in a component having a hydrophilic state.

If the Examiner intends to assert that the linker molecules of Fodor inherently have a selectively achievable hydrophilic state, Applicant respectfully submits that the Examiner has failed to establish reasonable support for that determination. Applicant notes that the MPEP clearly sets forth the standard in establishing inherency: "The fact that a certain result or characteristic *may* occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic." See MPEP §2112 (emphasis in original), quoting *In re Rijckaert*, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). Inherency "may not be established by probabilities or possibilities. The mere fact that a certain thing *may* result from a given set of circumstances is not sufficient." See MPEP §2112 (emphasis added), quoting *In re Robertson* 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). Furthermore, "[i]n relying upon a theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic *necessarily* flows from the teachings of the applied prior art." See MPEP §2112 (emphasis in original), quoting *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990). In light of the standards set forth in the MPEP and by the Federal Circuit outlined above, Applicant respectfully submits that Fodor fails to teach or suggest a component of the substrate having a selectively achievable hydrophilic state.

Wohlstadter fails to remedy the shortcomings of Fodor. While Wohlstadter teaches the use of array surfaces having hydrophilic areas surrounded by hydrophobic areas, Wohlstadter fails to teach or suggest a component of the array surface having a selectively achievable hydrophilic state. Therefore, the combination of Fodor and Wohlstadter fails to teach or suggest an array device having a selectively achievable hydrophilic state, much less a border region with a selectively achievable hydrophilic state.

Applicant respectfully requests that the Examiner provide a citation in Fodor that teaches or suggests the presence of a component having a selectively achievable hydrophilic state or withdraw the rejection.

3. Wohlstadter teaches away from the use of border region(s) having a selectively achievable hydrophilic state.

Applicant asserts that Wohlstadter cannot serve to create a *prima facie* case of obviousness because the reference teaches away from the use of a border region having a selectively achievable hydrophilic state.

At column 17, lines 17-49, Wohlstadter recommends the use of a "preferred technique," whereby patterned hydrophilic/hydrophobic regions are used "to *prevent spreading* of applied fluids" (emphasis added). In contrast, the purpose of a border region having a selectively achievable hydrophilic state is to "*cause spreading*" of "a droplet of fluid . . . contained within an immobilization or reaction region by a hydrophobic border." See Applicant's specification at page 36, line 22, to page 37, line 11 (emphasis added).

Because Wohlstadter recommends *prevention of spreading*, the reference leads one of skill in the art away from a border region having a selectively achievable hydrophilic state, which functions to *cause spreading*. Therefore, Wohlstadter teaches away from Applicant's border region having a selectively achievable hydrophilic state and cannot properly serve to create a *prima facie* case of obviousness.

4. There is no suggestion or motivation in the prior art to modify or combine the reference teachings.

The Examiner asserts that it would have been obvious to combine Fodor and Wohlstadter "in order to confine fluid samples to a defined area." See Office Action mailed

September 24, 2003, page 4, end of paragraph 10. However, Applicant respectfully asserts that one skilled in the art would not be motivated to create a border region having a selectively achievable hydrophilic state "in order to confine fluid samples to a defined area."

As discussed above, Wohlstadter teaches the use of array surfaces having hydrophilic areas surrounded by hydrophobic areas. If one skilled in the art merely required an array capable of confining fluid samples to a defined area, the Wohlstadter array surfaces would appear to be adequate. The Examiner has not identified any deficiency in the ability of the Wohlstadter array to confine fluid samples that would be overcome by replacing the Wohlstadter hydrophobic areas with Applicant's border region having a selectively achievable hydrophilic state.

Because there is no motivation, suggestion or teaching of the desirability of modifying the Wohlstadter array, Applicant respectfully asserts that the Examiner has failed to establish a *prima facie* case of obviousness.

Appl. No. 09/966,571
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Reply to Office Action of September 24, 2003

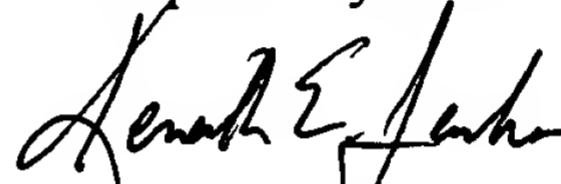
AMENDMENT

CONCLUSION

In view of the foregoing, Applicant believes all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,



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